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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/607,079 | 06/25/2003 | Leo Zhaoqing Liu | Rhodia.02036 us | 6545 |
| 110 | 7590 | 04/17/2006 | EXAMINER | |
| DANN, DORFMAN, HERRELL & SKILLMAN 1601 MARKET STREET SUITE 2400 PHILADELPHIA, PA 19103-2307 | | | WHITE, EVERETT NMN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1623 | |

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|---------------------------|--|
| Office Action Summary | Application No. 10/607,079 | Applicant(s) LIU ET AL | |
| | Examiner Everett White | Art Unit 1623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 18, 2006 has been entered.
2. The amendment filed January 18, 2006 has been received, entered and carefully considered. The amendment affects the instant application accordingly:
 - (A) Claims 1-20 were previously canceled;
 - (B) Claims 21 and 29-37 have been amended;
 - (C) New Claim 38 has been added;
 - (D) Comments regarding Office Action have been provided drawn to:
 - (I) Claim objections, which have been withdrawn;
 - (II) 112, 2nd paragraph rejections, which has been maintained;
 - (III) 102(b) rejections, which are maintained for the reasons of record;
 - (IV) 103(a) rejection, rendered moot by new ground of rejection over newly cited US Patent.
3. Claims 21-38 are pending in the case.
4. The text of those sections of Title 35, U. S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

5. Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 does not set forth proper Markush terminology, which renders the claim indefinite. In Claim 33, line 2, the phrase "is selected from" should be changed to - - is selected from the group consisting of - -.

6. Applicant's arguments filed January 18, 2006 have been fully considered but they are not persuasive. Despite indication in Applicants response filed January 18, 2006, that Claim 33 was amended in a manner suggested in the last Office Action in order to overcome the 112 rejection, no amendment of the Markush terminology in Claim 33 was noted. Accordingly, the rejection is maintained for the reason of record.

Claim Rejections - 35 USC § 112

7. Claims 29-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claims 29-37 have been amended to claims directed to graft copolymer of a polysaccharide. Although, the specification discloses unsaturated monomers being grafted onto polysaccharides, the specification does not describe the compound or composition as "graft copolymers". This lack of claimed terminology in the instant specification fails to comply with the written description requirement of 35 U.S.C. 112, first paragraph. Hence, the claims set forth "new matter" which is improper under 35 U.S.C. 112, first paragraph.

It is also noted that the instant specification does not support the subject matter of Claim 38, which is drawn to a composition comprising (1) a graft copolymer of a polysaccharide having a molecular weight lower than 700,000 Daltons and (2) an ungrafted polysaccharide having a molecular weight more than 2,000,000 Daltons, which is also improper 35 U.S.C. 112, first paragraph. Accordingly, the composition of Claim 38 set forth "new matter".

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 29-34 stand rejected under 35 U.S.C. 102(b) as being anticipated by Garnett et al (US Patent No. 3,522,158, already of record) for the reasons set forth on page 3 of the Office Action mailed February 23, 2005.

10. Applicant's arguments filed January 18, 2006 have been fully considered but they are not persuasive. Applicants argue that the rejection of the claims as been anticipated by the Garnett et al patent should be withdrawn because the Garnett et al patent does not disclose a grafted polysaccharide that has a molecular weight lower than the molecular weight of the ungrafted polysaccharide. This argument is not persuasive since the text in Claim 29, the independent claim, which recites "the grafted polysaccharide having a molecular weight lower than the molecular weight of the ungrafted polysaccharide" is based on a process limitation. Applicants are reminded that process limitations cannot impart patentability to a product that is not patentably distinguished over the prior art. *In re Thorpe et al.* (CAFC 1985), *supra*; *In re Dike* (CCPA 1968) 394 F2d 584, 157 USPQ 581; *Tri-Wall Containers, Inc. v. United States et al.* (Ct Cls 1969) 408 F2d 748, 161 USPQ 116; *In re Brown et al.* (CCPA 1972) 450 F2d 531, 173 USPQ 685; *Ex parte Edwards et al.* (BPAI 1986) 231 USPQ 981. With regard to the claim language that "said copolymer being dispersible in water", Applicants are reminded that a difference in intended use cannot render a claimed composition novel. Note *In re Tuominen*, 213 USPQ 89 (CCPA, 1982); *In re Pearson*, 494 F2d 1399; 181 USPQ 641 (CCPA, 1974); and *In re Hack* 114 USPQ 161. Accordingly, the rejection of Claims 29-34 under 35 U.S.C. 102(b) as being anticipated by Garnett et al patent is maintained for the reasons of record.

11. Claims 29, 35 and 36 stand rejected under 35 U.S.C. 102(b) as being anticipated by Restaino et al (US Patent No. 3,461,052, already of record) for the reasons disclosed on pages 3 and 4 of the Office Action mailed February 23, 2005.

12. Applicant's arguments filed January 18, 2006 have been fully considered but they are not persuasive. Applicants argue that the rejection of the claims as been anticipated

by the Restaino et al patent should be withdrawn because the Restaino et al patent does not disclose a grafted polysaccharide that has a molecular weight lower than the molecular weight of the ungrafted polysaccharide. This argument is not persuasive since the text in Claim 29, the independent claim, which recites "the grafted polysaccharide having a molecular weight lower than the molecular weight of the ungrafted polysaccharide" is based on a process limitation. Applicants are reminded that process limitations cannot impart patentability to a product that is not patentably distinguished over the prior art. *In re Thorpe et al.* (CAFC 1985), *supra*; *In re Dike* (CCPA 1968) 394 F2d 584, 157 USPQ 581; *Tri-Wall Containers, Inc. v. United States et al.* (Ct Cls 1969) 408 F2d 748, 161 USPQ 116; *In re Brown et al.* (CCPA 1972) 450 F2d 531, 173 USPQ 685; *Ex parte Edwards et al.* (BPAI 1986) 231 USPQ 981. Accordingly, the rejection of Claims 29, 35 and 36 under 35 U.S.C. 102(b) as being anticipated by Restaino et al patent is maintained for the reasons of record.

13. Claims 29 and 37 stand rejected under 35 U.S.C. 102(b) as being anticipated by Chuang et al (US Patent No. 4,831,097, already of record) for the reasons disclosed on pages 3 and 4 of the Office Action mailed February 23, 2005.

14. Applicant's arguments filed January 18, 2006 have been fully considered but they are not persuasive. Applicants argue that the rejection of the claims as been anticipated by the Chuang et al patent should be withdrawn because the Chuang et al patent does not disclose a grafted polysaccharide that has a molecular weight lower than the molecular weight of the ungrafted polysaccharide. This argument is not persuasive since the text in Claim 29, the independent claim, which recites "the grafted polysaccharide having a molecular weight lower than the molecular weight of the ungrafted polysaccharide" is based on a process limitation. Applicants are reminded that process limitations cannot impart patentability to a product that is not patentably distinguished over the prior art. *In re Thorpe et al.* (CAFC 1985), *supra*; *In re Dike* (CCPA 1968) 394 F2d 584, 157 USPQ 581; *Tri-Wall Containers, Inc. v. United States et al.* (Ct Cls 1969) 408 F2d 748, 161 USPQ 116; *In re Brown et al.* (CCPA 1972) 450 F2d 531, 173 USPQ 685; *Ex parte Edwards et al.* (BPAI 1986) 231 USPQ 981. Accordingly,

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the rejection of Claims 29 and 37 under 35 U.S.C. 102(b) as being anticipated by Chuang et al patent is maintained for the reasons of record.

Claim Rejections - 35 USC § 103

15. Claims 21-28 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Restaino et al (US Patent No. 3,461,052, already of record) in view of Jost et al (US Patent No. 5,223,171, newly cited).

Applicants claim a method for grafting an unsaturated monomer onto a polysaccharide comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer and a water soluble or water dispersible polysaccharide; (2) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide, and the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Datons. Additional limitations in the dependent claims include specific unsaturated monomers and specific polysaccharides.

The Restaino et al patent discloses a process for the production of graft substrates by ionizing radiation, wherein a hydrophilic polymeric substrate is irradiated in the presence of a solution of a monomeric vinyl compound (see abstract). See column 2, 1st paragraph wherein suitable substrates materials are listed, which include cellulose, wool, starch, alginic acid and the alginates, vegetable gums such, for example, as locust bean gum, guar flour, or gum tragacanth, gelatin, casein, pectin, polyvinyl alcohol, hydrophile high molecular weight polyalkylene glycols, and the like, which meet the requirement of the polysaccharides disclosed in instant Claims 22-25. Suitable vinyl monomers are listed in the 2nd paragraph of column 2, which include vinyl acetate, acrylic acid and its esters, methacrylic acid and its esters, acrylamide, acrylonitrile, styrene, vinyl toluene, vinyl pyridine, alkyl vinyl pyridines, divinyl benzene, butadiene, N,N-methylene bis-acrylamide, and the like, which meet the requirements of the unsaturated monomers disclosed in instant Claims 22 and 26-28. The Restaino

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et al patent also teaches using radiation to produce graft copolymers wherein the radiation may also be used to depolymerize the polymers. See column 3, 2nd paragraph wherein Restaino et al patent teaches that useful graft copolymers of cellulose degradation products may be obtained by employing higher radiation doses.

The method for grafting an unsaturated monomer onto a polysaccharide of the instant claims differ from the process of producing graft copolymers in the Restaino et al patent by claiming that the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Daltons.

However, the Jost et al, which discloses detergent composition containing biodegradable graft polysaccharide shows that graft polysaccharide which consists essentially of a polydextrose having an average-weight molecular mass of less than 10,000 is well known in the art (see abstract). The average-weight molecular mass of less than 10,000 disclosed in the Jost et al patent falls with the requirement of the instant claims that the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Daltons. See column 2, lines 22-25, wherein the Jost et al patent discloses graft polydextrose being obtained by any known process for grafting ethylenically unsaturated monomers onto polysaccharides and the next sentence which states that the grafting may be effected by irradiation, which is within the scope of the process requirements of instant Claims 21-28.

One having ordinary skill in the art would have been motivated to employ the process of the prior art with the expectation of obtaining the desired product because the skilled artisan would have expected the analogous starting materials to react similarly.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polysaccharide of the graft copolymers produced in the process using radiation for depolymerization of polysaccharide of the Restaino et al patent with polysaccharide having a molecular weight of not more than 700,000 Daltons in view of the recognition in the art, as evidenced by the Jost et al patent, that polysaccharide having an average-weight molecular mass of less than 10,000 allows for the preparation of a product which is biodegradable.

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16. Applicant's arguments with respect to Claims 21-28 have been considered but are moot in view of the new ground(s) of rejection.

Summary

17. All the pending claims are rejected.

Examiner's Telephone Number, Fax Number, and Other Information

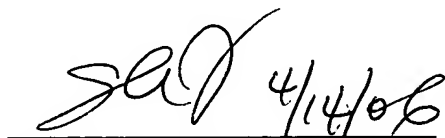
18. For 24 hour access to patent application information 7 days per week, or for filing applications, please visit our website at www.uspto.gov and click on the button "Patent Electronic Business Center" for more information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is (571) 272-0660. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang, can be reached on (571) 272-0627. The fax phone number for this Group is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.


E. White


Shaojia A. Jiang
Supervisory Primary Examiner
Technology Center 1600